CLAIMS

1. Process for producing a diagram of an installation using apparatuses, each apparatus being supplied with gas, comprising:

- the consultation of one or more databases (6) comprising, for each apparatus, data on the flow rate, the nature, the purity of the gas supplying the apparatus, and the supply pressure of that gas for that apparatus,

- the selection, for each apparatus, of a value or of a limit value of duration or frequency of use,

- the calculation, for each apparatus, of the consumption, or of the limit consumption, according to the utilisation value and to the flow rate data,

- the calculation, for each gas and for each gas purity, of the total of the consumptions of all of the apparatuses,

- the consultation of a database (5) for proposing, for each gas and each gas purity, a packaging, according the consumptions and the technical constraints relating to the storage of the gas and/or to their delivery.

2. Process for producing a set of data for the constitution of an installation using apparatuses, each apparatus being supplied with gas, comprising the production of a database containing:

- for each apparatus, the data on the nature and the purity of the gas for that apparatus, together with the flow rate, the supply pressure and the consumption of each gas for that apparatus,

- the total of the consumptions of all the apparatuses, for each gas and each gas purity,

- data relating to a packaging, for each gas and each gas purity, as a function of the consumptions of the apparatuses.

3. Process according to Claim 2, the production of the database comprising the following steps:

- the consultation of one or more databases (6) comprising, for each apparatus, data on the flow rate, the nature, the purity of the gas supplying the apparatus, and the supply pressure of that gas for that apparatus,

- the selection, for each apparatus, of a value or a limit value of duration or frequency of use,

- the calculation, for each apparatus, of the consumption, or of the limit consumption, according to the utilisation value and to the flow rate data.

4. Process according to Claim 2 ~~or 3~~, the production of the database furthermore comprising the consultation of a database (5) for proposing, for each gas and each gas purity, a packaging, as a function of the consumption.

5. Process according to Claim 4, the packaging, for each gas and each gas purity also depending on technical constraints relating to the storage of the gas and/or to their delivery.

6. Process according to ~~one of Claims 1 to 5~~ Claim 1, furthermore comprising:

- a step of consultation of a database (7), comprising data on gas installation equipment,

- searching, in this database, for the equipment (90-100, 104, 106, 108) making it possible, for each packaging and each apparatus, to connect the said packaging to the said apparatus (105, 107, 109).

7. Process according to Claim 6, the consultation of the database (7) comprising data on gas installation equipment, and searching, in that database, for the necessary equipment (90-100, 104, 106, 108) comprising:

- a first step of consultation and searching for the high-pressure section, associated with each gas packaging,

- a second step of consultation and searching for the low-pressure section, associated with each apparatus supplied with that gas.

8. Process according to Claim 7, the first and second steps of consultation and searching furthermore comprising a display or visualisation which shows:

- in the first step: the storage or the packaging of the gas, and the equipment necessary for the functioning of this storage or this packaging,

- in the second step: the connections to be made between the outlet of the storage or the packaging of the gas and the apparatus supplied with that gas.

9. Process for producing a diagram of an installation using apparatuses, each apparatus being supplied with gas, comprising:

- the production of a set of data according to ~~one of Claims 2 to 5~~ Claim 2,

- the production of a diagram or graphical representation, as a function of the data contained in this set of data.

10. Process according to ~~one of Claims 1 to 8~~ Claim 1, furthermore comprising a step of graphical representation of the installation comprising the said apparatuses (52, 54, 56, 58, 60; 72, 74, 76, 78, 80, 82, 105, 107, 109) and the gas sources (62, 64, 66, 96, 306) to which they are connected.

11. Process according to Claim 9 ~~or 10~~, the graphical representation being preceded by a step of selection of a graphical representation, or of a type of graphical representation, from among several possible graphical representations or types of representation.

12. Process according to ~~one of Claims 9 to 11~~ Claim 9, the diagram or graphical representation, or one of the graphical representations, being three-dimensional and comprising a representation of the ductings (70) connecting the said apparatuses to the gas sources.

13. Process according to ~~one of Claims 9 to 12~~ Claim 9, the diagram or graphical representation, or one of the graphical representations, representing the said apparatuses (105, 107, 109), the gas sources to which they are connected (90, 96) and the equipment (98, 100,

102, 104, 106, 108, 308-318) for connecting the said apparatuses to the said gas sources.

14. Process according to ~~one of Claims 1 to 13~~ Claim 1, comprising, when one of the gas is a mixture of a balance gas and at least a first mixed gas:

- the selection of the desired quantitative composition of gas mixed in the mixture,

- the consultation of a database (5) comprising, for each mixture, the preparation tolerances and the corresponding analysis uncertainties,

- the indication, for the desired quantitative composition, of the preparation tolerance and of the analysis uncertainty.

15. Process according to Claim 14, furthermore comprising, when several quantitative compositions are selected for a same mixture:

- a calculation of a linear regression from analysis details for the different mixtures and the different quantitative compositions,

- the display of a regression line (D') corresponding to that calculation of linear regression, for a given apparatus.

16. Process according to ~~one of the preceding claims~~ Claim 1, the database (6) consulted, or the database produced, furthermore comprising, for at least one of the apparatuses, data on the nature of a mixture with which that apparatus may be calibrated, and data on the frequency of calibration of the said apparatus.

17. Process according to ~~one of Claims 1 to 16~~ Claim 1, wherein, furthermore, there is displayed, on a same page (232) of a screen of a display means, and for a same apparatus, the corresponding data (236, 238, 240, 242) on the gas to be used with that apparatus.

18. Process according to ~~one of Claims 1 to 17~~ Claim 1, wherein, furthermore, there is displayed, on a same page (258) of a screen of a display means, and for a same gas, the total of the consumptions for that gas and all of the apparatuses supplied by that gas.

19. Process for producing an installation using apparatuses, each apparatus being supplied with gas, comprising:

- the production of a diagram or a graphical representation of the installation, using a process according to Claim 1, ~~or according to one of Claims 9 to 13~~,

- the production of the installation.

20. Device for producing a diagram of an installation using apparatuses, each apparatus being supplied with gas, this device comprising:

- means (2) of storing:

- at least one database (6) comprising, for each apparatus, data on the flow rate, the nature and the purity of the gas supplying the apparatus, and the supply pressure of that gas for that apparatus,

- a database (5) comprising, for each gas and each gas purity, at least one possible packaging,

- means (30) for selecting, for each apparatus, a value or a limit value of duration or of frequency of use,

- means (22, 24) for calculating, or specially programmed for calculating, for each apparatus, the consumption, or the limit consumption, according to the data on the flow rate and the utilisation value,

- means (22, 24) for calculating, or specially programmed for calculating, for each gas and each gas purity, the total of the consumptions for all the apparatuses,

- means (12, 14, 16, 31) for consulting the packaging database (5) in order to find in it, according to gas consumption data and technical constraints relating to the storage of the gas and/or to their delivery, a possible packaging.

21. Terminal device (8) for producing a diagram of a gas installation, for a laboratory or a factory comprising at least one apparatus, each apparatus being supplied with gas, this device comprising:

- means of communication (12, 14, 16, 31) for establishing communication between the said terminal device and means (2) containing at least one database (4, 5, 6, 7) comprising, for each apparatus, data on the flow rate, the nature and the purity of the gas supplying the apparatus, and the supply pressure of that gas for that apparatus, and for transferring data from the said set of databases to the said terminal,

- means (30) for supplying the said terminal with user data for the said terminal, comprising at least one item of data on a used apparatus or identifying a used apparatus,

means of storage (24, 26), in communication with the means for supplying the said terminal with user data, for storing these user data on an apparatus used by the user, together with data supplied by the database on the flow rate, the nature and the purity of the gas supplying that apparatus, and the supply pressure of that gas for that apparatus,

- means (22, 24) for calculating, or specially programmed for calculating, for each apparatus, the consumption or the limit consumption, according to the flow rate of the gas, and for calculating, for each gas and each gas purity, the total of the consumptions of all of the apparatuses used,

- means of display (29), in communication with the means of storage, for displaying at a least a portion of these data supplied by the database, and/or the total or totals of consumption calculated for each gas.

22. Device according to Claim 20 ~~one of Claims 20 or 21~~, furthermore comprising means (22, 29) for graphically representing the installation comprising the said apparatuses and their gas supply means.

23. Device according to Claim 22, the means of graphical representation being three-dimensional representation means.

24. Device according to Claim 19 ~~one of Claims 19 to 23~~, furthermore comprising, for the case where one of the

gas is a mixture of a balance gas and at least a first mixed gas:

- means (30, 10) for selecting the desired quantitative composition of gas mixed in the mixture,

- means (22, 12, 31) for, or specially programmed for, establishing communication between the said device and a database (5) comprising, for each mixture, the preparation tolerances and the corresponding analysis precisions, and for searching in that database for the preparation tolerance and the analysis precision corresponding to the desired quantitative composition,

- means (29) for displaying, for the desired quantitative composition, the preparation tolerance and the analysis precision.

25. Device according to Claim 24, furthermore comprising, for the case where several quantitative compositions are selected for a same mixture:

- means (22) for carrying out a linear regression calculation from analysis precisions for the different mixtures and the different quantitative compositions,

- means (29) for displaying a regression line (D') corresponding to that linear regression calculation, for a given apparatus.

26. Device according to ~~one of Claims 20 to 25~~ Claim 20, the database (6) comprising, for each apparatus, data on the gas supplying that apparatus, also comprising, for at least one of the apparatuses, data on the nature of the gas with which that apparatus can be calibrated, and data on the frequency of calibration of that apparatus with that gas.

27. Device according to ~~one of Claims 20 to 26~~ Claim 20, furthermore comprising means for, or specially programmed for, displaying, on a same page (232) of a screen of a display means (29), and for a same apparatus, the corresponding data (236, 238, 240, 242) on the gas to be used with that apparatus.

28. Device according to ~~one of Claims 20 to 27~~ Claim 20, furthermore comprising means for, or specially programmed for, displaying, on a same page (258) of a

screen of a display means (29), and for a same gas, the total of the consumptions for that gas and all of the apparatuses supplied by that gas.

29. Device according to ~~one of Claims 20 to 28~~ CLAIM 20, the means of storing, or containing, databases being localised in an central computer (2).

30. Computer program comprising the instructions for implementing a process according to ~~one of Claims 1 to 18~~ CLAIM 1.

31. Data carrier, which can be read by a computer system, comprising the data, in coded form, for implementing a process according to ~~one of Claims 1 to 18~~ CLAIM 1.

32. Software product comprising a program data carrier means, which may be read by a computer system, allowing implementation of a process according to ~~one of Claims 1 to 18~~ CLAIM 1.